



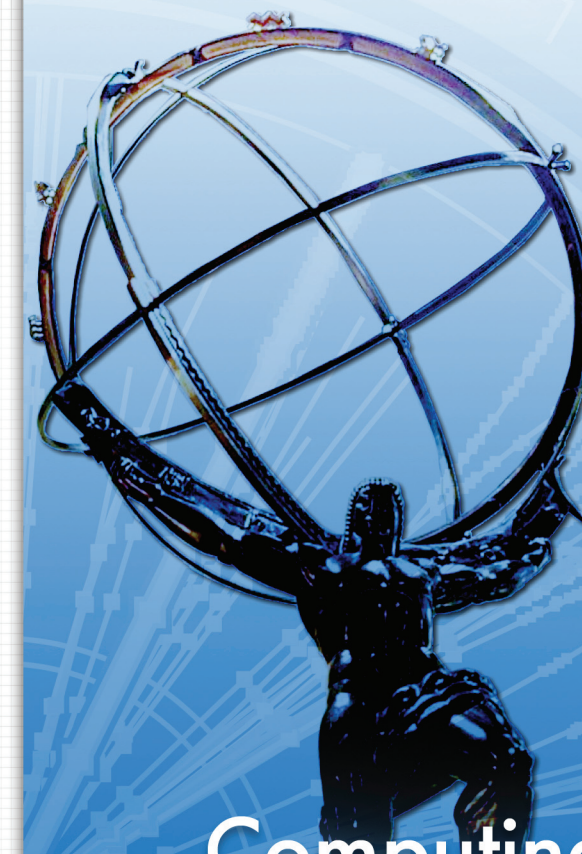
In order to explore the fundamental nature of matter and the basic forces that shape our universe, high energy particle collisions are studied in the laboratory. Protons are accelerated in the Large Hadron Collider (LHC), an underground accelerator ring 27 km in circumference at CERN, the European particle physics laboratory outside Geneva. The particle beams are steered to collide in the middle of the

ATLAS detector. Examination of the debris of these collisions reveals information about fundamental particle processes.

The energy density in these high energy collisions is similar to the collision energy of particles in the early universe, less than a thousandth of a billionth of a second after the Big Bang.

The ATLAS Detector is one of the largest and most complex physics experiments ever conducted. This endeavour is made possible thanks to the dedicated work of 2500 scientists including more than 700

students from more than 169 laboratories in 37 countries that take part in the world-wide ATLAS collaboration.



## Computing in the ATLAS Experiment

The ATLAS detector will produce more than 3 Peta-bytes of data every year, equivalent to the data that can be stored in 600,000 DVD disks. This enormous amount of information must be recorded on tape, processed and distributed around the world, so that all physicists in the 37 countries of the collaboration have the possibility to analyse them.

The LHC Computing Grid provides the world-wide infrastructure, including computing and data storage capacity and high-bandwidth networks, that is used by ATLAS to distribute, process and analyse the data. It

links CERN to 10 larger and 50 smaller computing centres that support ATLAS activities. This infrastructure can be used by all collaboration members for physics analysis.

Because of the large amount of data to be processed, ATLAS has developed new technologies to automate the operation of this distributed computing system and to reach a high level of efficiency and reliability; the final aim is that everyone will be able to use the ATLAS Grid as if it was just an extension of a local computing cluster.

